

What is claimed is:

1 1. A functional composite fiber, comprising a
2 plurality of the T-lobes connected to each other at their
3 bases, wherein the caps of the T-lobes contain a component
4 and their bases contain the component and an additive.

1 2. The functional composite fiber as claimed in claim
2 1, wherein the caps of the T-lobes connect with each other
3 to form a porous hollow fiber with polygonal cross-section.

1 3. The functional composite fiber as claimed in claim
2 1, wherein the caps of the T-lobes are not connected to each
3 other and form a non-hollow fiber with multilateral cross-
4 section.

1 4. The functional composite fiber as claimed in claim
2 1, wherein the component comprises polyester, nylon,
3 polyolefin, poly(acrylonitrile) (PAN), or cellulose.

1 5. The functional composite fiber as claimed in claim
2 4, wherein the polyester is polyethylene terephthalate
3 (PET).

1 6. The functional composite fiber as claimed in claim
2 1, wherein the additive comprises anti-UV, far-IR, or anti-
3 bacterial & mildew-retarding agents.

1 7. A spinneret for the manufacture of a functional
2 composite fiber having a plurality of the T-lobes connected
3 at their bases, and the caps of the T-lobes contain a

4 component and their bases contain the component and an
5 additive, the spinneret comprising:

6 a plurality of rectangular first exits extending
7 outward to form an equilateral polygon, and
8 a plurality of rectangular second exits radially
9 arranged from the mass center of the equilateral
10 polygon to each side of equilateral polygon.

1 8. The spinneret as claimed in claim 7, wherein the
2 adjacent first and second exits form a right angle.

1 9. The spinneret as claimed in claim 7, wherein the
2 first exit is longer than the second exit.

1 10. The spinneret as claimed in claim 7, wherein the
2 first exit is shorter than the second exit.

1 11. The spinneret as claimed in claim 7, wherein the
2 equilateral polygon is an equilateral triangle.

1 12. A manufacturing method for a functional composite
2 fiber, comprising: producing a functional composite fiber
3 using a spinneret,

4 wherein

5 the spinneret comprises:

6 a plurality of rectangular first exits extending
7 outward to form an equilateral polygon, and
8 a plurality of rectangular second exits radially
9 arranged from the mass center of equilateral
10 polygon to each side of equilateral polygon;
11 and

12 the functional composite fiber comprises a first
13 component extruded from the first exit and a
14 second component extruded from the second exit.

1 13. The manufacturing method as claimed in claim 12,
2 wherein the adjacent first and second exit form a right
3 angle.

1 14. The manufacturing method as claimed in claim 12,
2 wherein the first exit is longer than the second exit to
3 obtain a porous hollow fiber with polygonal cross-section.

1 15. The manufacturing method as claimed in claim 12,
2 wherein the first exit is shorter than the second exit to
3 obtain a non-hollow fiber with multilateral cross-section.

1 16. The manufacturing method as claimed in claim 12,
2 wherein the equilateral polygon is an equilateral triangle.

1 17. The manufacturing method as claimed in claim 12,
2 wherein the first component comprises polyester, nylon,
3 polyolefin, poly(acrylonitrile) (PAN), or cellulose.

1 18. The manufacturing method as claimed in claim 17,
2 wherein the polyester is polyethylene terephthalate.

1 19. The manufacturing method as claimed in claim 18,
2 wherein the second component comprises the first component
3 and an additive.

1 20. The manufacturing method as claimed in claim 19,
2 wherein the additive comprises anti-UV, far-IR, or anti-
3 bacterial & mildew-retarding agents.